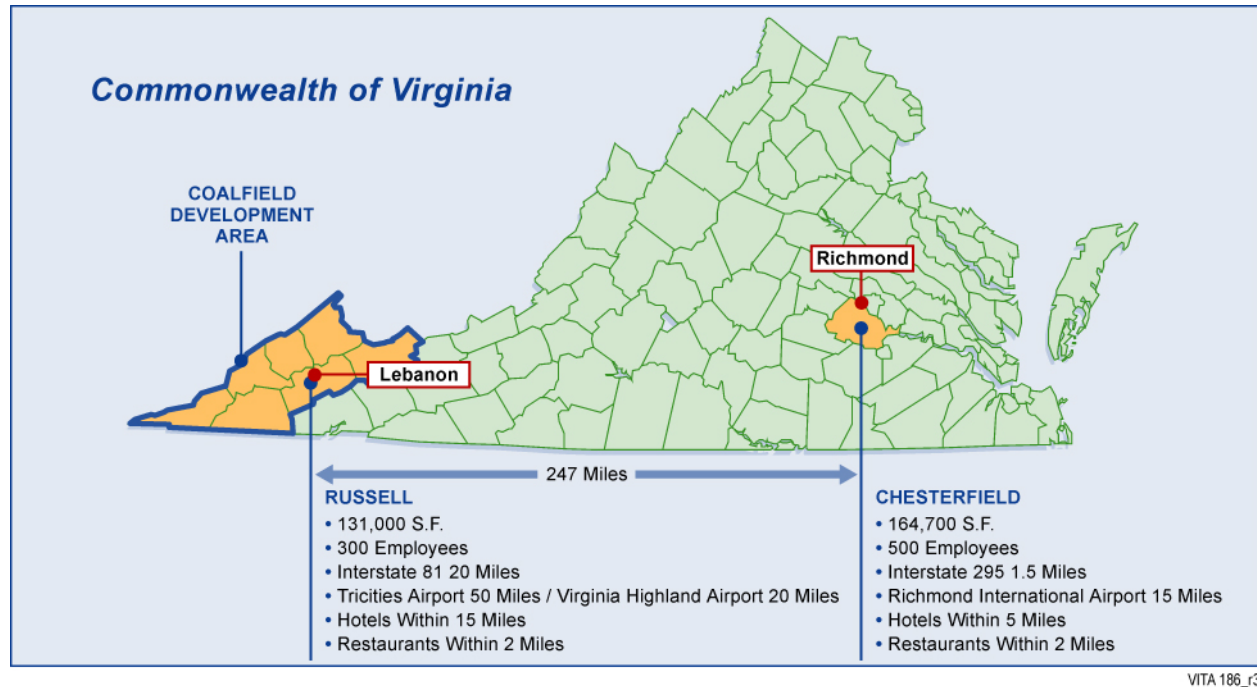


**ADDENDUM 1 TO SCHEDULE 4  
TO THE  
COMPREHENSIVE INFRASTRUCTURE AGREEMENT  
DESCRIPTION OF FACILITIES**

## Statement of Technical Approach to Data Center Facilities Services

Northrop Grumman will provide a new office complex and data center in the greater Richmond area, located at the Meadowville Technology Park in Chesterfield County. Northrop Grumman will also provide a new help desk and back-up data center complex in Southwest Virginia, located in the Russell County Regional Business/Technology Park in Lebanon, Virginia. **Exhibit 1** shows the locations of the two facilities.



**Exhibit -1 Commonwealth of Virginia Facility Locations**

The Meadowville Data Center, or the Richmond Enterprise Solutions Center (RESC), will be designed and constructed to Tier III standards as set forth by the Uptime Institute, providing the necessary infrastructure to meet the demands of today's information technology equipment, especially in the electrical and cooling arenas. The RESC will provide for the security, flexibility, and scalability objectives of VITA and the Eligible Customers.

Northrop Grumman will utilize companies currently doing business within the Commonwealth of Virginia to address architectural and engineering, general contracting, and operations and maintenance of the new facilities. These companies include McKinney and Company, an architectural and engineering (A&E) firm headquartered in Ashland, Virginia; Whiting-Turner, a general contractor located in Richmond, Virginia; and Lee Technologies, headquartered in Fairfax, Virginia. Lee Technologies will be responsible for ongoing facilities management in addition to Commissioning of the Sites in Chesterfield and Russell Counties.

Northrop Grumman will relocate all the VITA and Northrop Grumman personnel from the Richmond Plaza Building, as well as the mainframe and server workloads.

Design and construction of the Southwest Enterprise Solutions Center (SESC), a Call Center (Help Desk) and Back up Data Center will be located in the Russell County Regional Business/Technology Park, Site One (1), located in Lebanon, Virginia. It will be designed and constructed by the same Commonwealth-based design and construction firms used for the RESC

facility in Chesterfield County. The design of this 131,000-square-foot facility will begin immediately upon contract award.

Northrop Grumman will work with VITA management to customize the facility layout and office sizes for Richmond and Russell County locations. VITA office standards, as identified in the VITA Detailed Proposal Requirements document, will be utilized.

Furniture for the facilities will be installed and wired for voice and data. The network, as well as telecommunication infrastructure, will be tested before the relocation of personnel from the Richmond Plaza Building occurs.

Upon relocating employees into the new facilities, all utilities, heating ventilation, and air conditioning (HVAC), evacuation procedures, restrooms, break room, and vending machines will be operational. Security surveillance systems, fire and burglar alarms will be operational and monitored internally, and be relayed to off-site monitoring stations. Off-site infrastructure monitoring will be performed at the SESC and at Lee Technologies Control Center. Likewise, the RESC will be capable of monitoring the SESC.

Security will utilize the Northrop Grumman's Security Analysis Management System (SAMS) along with a receptionist/security guard during prime shift. The receptionist/security guard will be positioned at the front entrance reception desk of the RESC and the SESC locations.

In conjunction with its development partners, Northrop Grumman will create a master design and construction plan for each facility and share the progress on the construction with VITA management at least once per month. Also, in conjunction with VITA management, Northrop Grumman will generate a master relocation project schedule detailing moves, phasing and man-hour requirements to mitigate any anomalies during the relocation process. Project plans will also be developed for approval by VITA management for the mainframe and server workload migrations from the Richmond Plaza Building to the RESC.

The relocation process will include the movement of approximately 100 employees per month, for approximately 400 employees from Richmond Plaza Building to RESC, and approximately 30 employees to SESC.

Northrop Grumman will provide a move memorandum and online bulletins with the details of the moves and who will be relocating and when. Part of the relocation package will include safety procedures, such as evacuation templates for the new facility. Packing materials such as cardboard boxes, tape, labels for boxes, and plastic bags will be provided by the Northrop Grumman in advance of the actual move dates.

A facility representative from Northrop Grumman will assist in coordinating at the Richmond Plaza Building during relocations, and be responsible for taking inventory of items being loaded onto moving vans. All accessories for laptops, desktops, mouse, keyboards, and network cables are to be placed in plastic bags and labeled with the appropriate destination, by employees utilizing this equipment.

Once at their destination, all computers and accessories will be connected. Technical support will be available to assist in solving problems with voice or data connectivity. This will include proper operation of laptops and desktop computers.

Prior to relocating employees, new building access cards (Key cards) will be prepared by Northrop Grumman in conjunction with VITA and Northrop Grumman management to

determine access levels for each employee. Determination of access levels will occur at least 2 weeks in advance of the moves.

An individual's access level will determine what areas of the facility a person may enter, such as the data center, the mechanical rooms, or the warehouse. It will also restrict what time of day or days of the week a person is allowed access.

On a person's first day of arrival for work at RESC, individuals will be issued new badges, and a Northrop Grumman Environmental Safety and Health representative will discuss building evacuation policy and procedures. An Emergency Response Team (ERT) will be created, and an individual from each area of the building will be assigned to this team as that area is occupied. Northrop Grumman will be responsible for ERT training for designated ERT members.

### **Physical Site Infrastructure Strategy**

The Richmond Enterprise Solutions Center design approach will use the latest engineered steel building technology to minimize the construction time, yet satisfy the requirement for a "hardened" structure. The facility will be engineered to allow for future expansion of the office areas as well as the data center.

The design strategy for RESC is to provide a fault tolerant environment meeting current industry standards as defined by the Gartner Group, and to meet Tier III standards as defined by the Uptime Institute for mission-critical facilities. The facility will be designed to meet all applicable Commonwealth, Federal and Local Codes. All applicable Occupational Safety and Health Administration (OSHA) requirements and programs will be in place prior to occupancy.

The electrical system supporting the critical load will use dual-path technology. This will be a true dual path versus a less reliable loop scheme. As an example, the Meadowville facility will be fed from 2 different substations, Dominion Power's Tyler (45MVA) and Enon's (50MVA) substations.

RESC will be constructed to standards that accommodate 100 watts gross per square foot. The critical load will be supported by multiple Uninterruptible Power Supply (UPS) systems, 2 feed Power Management Modules (PMM), and redundant power generation systems with dual fuel tanks, each providing 72 hours of fuel support.

Components of the electrical configuration are important to the reliability and the safety of the installation. **Exhibit 2** acknowledges the quality component points highlighted in **Schedule 4 Section 1.2.2**.

Component	Description
Isolation K factor transformers	All transformers utilized in the PMM used for 480volt IPS to 120/208 volts will be K rated.
K factor Rating	All transformers requiring a K rating will be at a minimum K13
Transformer degrees centigrade of rise	All transformers will not exceed 80 degrees centigrade of rise
DC system fused protection	All UPS DC systems will include fuse protection
48-volt delivery via fused panels	All panels delivering 48 volts will be fuse protected

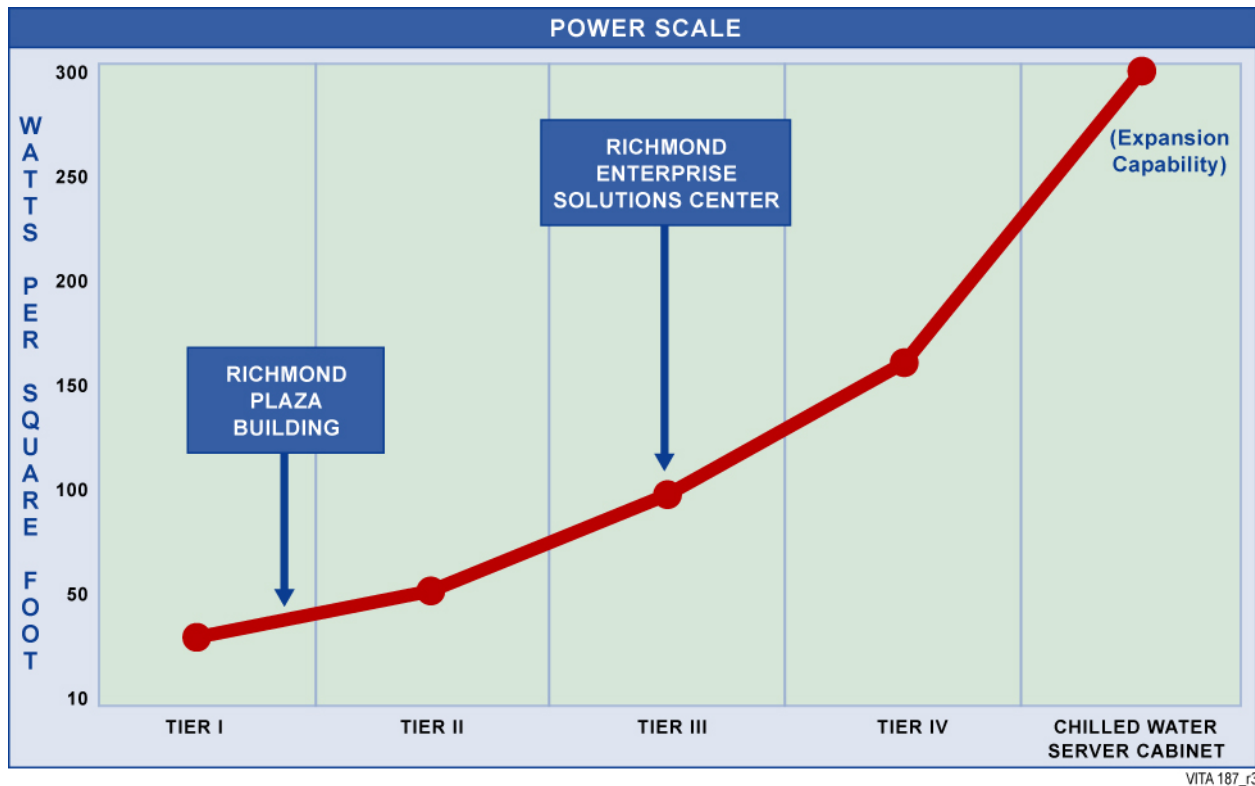
**Exhibit 2 Electrical Quality Components**

All of the data center support equipment configurations will be designed to aforementioned Tier III standards, providing the ability to maintain the components without interruption of electrical power or cooling to the facility. The power generation systems will also support mechanical and other building functions. For the purposes of providing additional fuel, dual source contracts will be implemented with local providers.

Interior network cable will be Category 6 augmented (Cat 6 A). Each workstation will have 1 voice drop and 2 data drops. The training room, video conference room, and auditorium will be accommodated with sufficient voice and data communications to support attending personnel and employees. Wireless communications, with appropriate security, will be provided for the auditorium, training room, and select conference rooms.

Satellite Television (TV) will be provided at both RESC and SESC. Northrop Grumman will use the TV service to monitor weather and news events in the Centralized Management Operations Center (CMOC) at both locations. TV monitors will be placed in locations designated by VITA for their use.

The air-conditioning system will use a Tier III-rated chilled water plant with redundancy. This includes chilled water loops under the raised floor. Both the send and return loop will begin and return to the mechanical room in accordance with Tier III standards. Ventilation and heat exhausting will be provided by an above-ceiling plenum scheme to maximize efficiency. In addition to feeding the computer room air-conditioning units, the chilled water loop will be available to support the latest technology in chilled water server cabinets. Chilled water server cabinets provide cooling up to 300 watts per square foot, which substantially increases the cooling capability of the data center without excessive investment and retrofit of the building cooling plant. These new technology server cabinets will be provided, as required, to maintain appropriate environment. All environmental parameter targets as specified in **Schedule 4, Table 1** will be met and/or exceeded, including the mechanical room and electrical room ambient temperature requirements.



**Exhibit 3 Power Scale**

*This exhibit shows the required power to be delivered to a data center based on The Uptime Institute's Tier ratings.*

The power scale in **Exhibit 3** illustrates the current conditions of the Richmond Plaza Building Data Center versus RESC. The Richmond Plaza Building cannot achieve the power density above approximately 40 watts per square foot due to the inability to exhaust excessive heat at the Richmond Plaza Building. The heat density of today's server technology requires a greater capacity, thus the 100 watts per square foot requirement. The use of chilled water server cabinets will allow for greater heat density as the technology demand increases. RESC will be designed to allow chilled water distribution systems to accommodate the aforementioned new technology cabinets should they be required in the future.

Physical security management and security monitoring are critical components. Both RESC and SESC will have a security office to centralize the security management and monitoring of the sites. Security monitoring will be interactive between sites.

Campus security at both sites will use Northrop Grumman's Security Analysis Management System (SAMS) to coordinate access and video surveillance using the latest "smart" technology (see **Exhibit 4**). The "smart" technology refers to the ability of the system to recognize incidents without human intervention. SAMS will monitor the buildings interior, exterior perimeter and parking areas. SAMS delivers high security service levels, and will include analysis, enhanced access, searching and sharing, retention and archiving, increased automation and scalability, and authenticated data. Images and events or incidents will be captured by color digital cameras with features including motion activation with pan, zoom and tilt features. SAMS will apply analytics to the cameras that integrate with other enterprise security devices, alarms, and command and control systems. SAMS will interface with the Access Control System to capture access

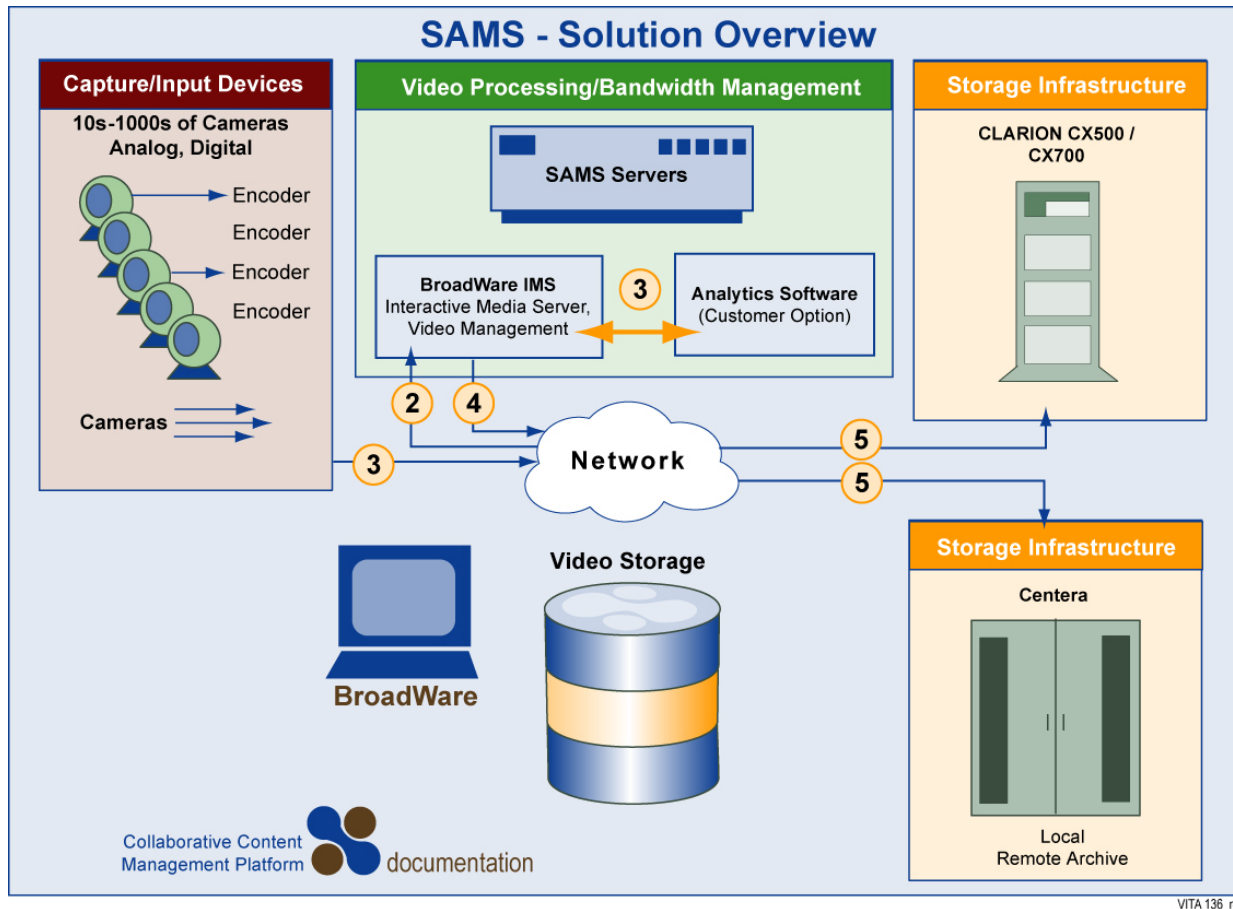
violations. With Northrop Grumman's SAMS, the security personnel will be able to view real-time video while receiving policy and anomaly based alerts. These policy-based alerts will be produced from intelligence provided by the security personnel. The capture of images is active until they are archived online for historical comparison or legal purposes. Storage of SAMS data will be maintained in the system for a minimum of 30 days, and retained on disk for a mutually agreed period.

Cameras will be used to monitor the exterior control perimeter of the campus, as well as building perimeter and entrances, parking lots, roof, exterior utilities, and premise facilities, including generators and mechanical equipment, as well as utility transformers. A mutually agreeable set-back will be provided around the perimeter of the building; this set-back area will be under camera surveillance.

Security obstacles around the facility will use a combination of bollards, existing trees, earthworks, and flower plant bollards.

A Public Address System will service the entire building, and can be activated at the Security Office, the CMOC or key management offices.

These security systems will be monitored at the security office, or at the CMOC on a 24x7 basis. Panic buttons will be located at the Reception Desk and the CMOC. Remote roving units (panic buttons) will be provided to key personnel as designated by VITA and Northrop Grumman. These devices will alert local law enforcement agencies in the event of an incident requiring their assistance.



#### Exhibit 4 Security Analysis Management System (SAMS)

Access control will be provided using Northrop Grumman's access card, which uses a radio frequency identification device (RFID) chip technology. This RFID technology will be installed throughout both RESC and SESC and zoned for "need to know" access. The access control system is database oriented, which allows for individual information, including zone access, to be displayed in the security office. The system will be interfaced with the SAMS system to capture attempted access violation incidents in addition to the access control systems documentation. The Richmond area data center will be further hardened using a mantrap (portal) equipped with not only card key, but also biometric authentication via palm reader technology, as shown in **Exhibit 5**. The benefits of the portal with biometrics include 1) the elimination of tailgating and anti-pass back control via a weight sensitive floor, and 2) two-factor authentication via cardkey and biometrics.



In addition to the access control portal, a vendor and “crash out” door will be provided and supervised by security personnel. The crash out door provides an alternate entryway into the data center for handicapped and visiting personnel that can only be used through visual verification by security.

Security personnel will be responsible for lock and key administration in accordance with documented policies and procedures.

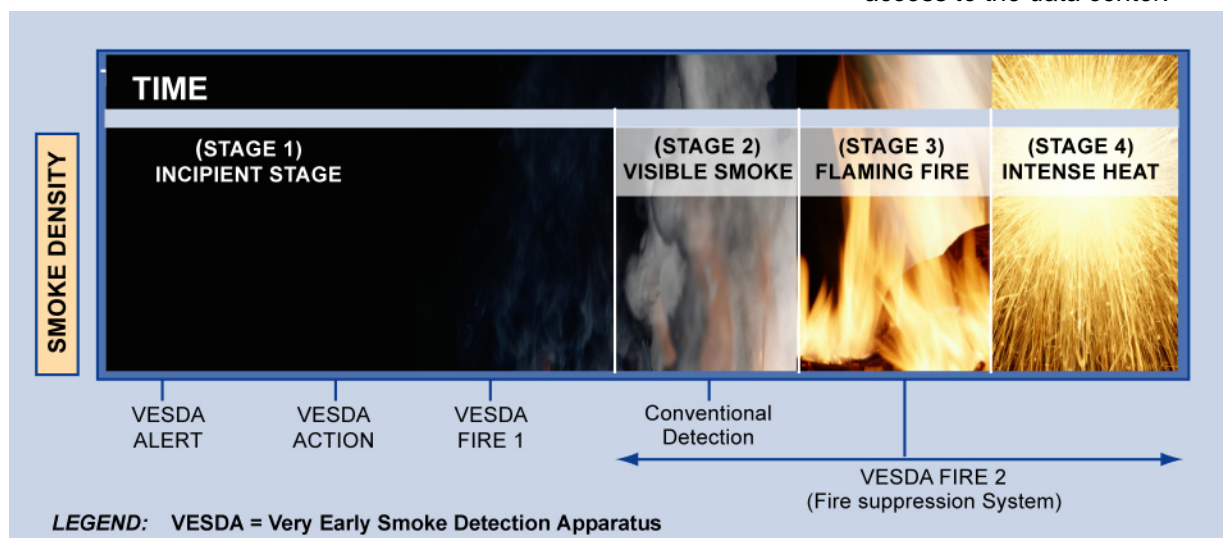
The new facilities will be isolated, with no signage indicating the function of the facility in either the Richmond or Southwest location.

Northrop Grumman will provide a fire suppression system to protect the new data centers located in RESC and SESC. The fire suppression system will be a combination of a very early smoke detection apparatus (VESDA) system, a high sensitivity smoke detection system (HSSD), and a double interlock pre-action sprinkler system. The VESDA system interfaces with the pre-action system and provides 3 levels of alarm prior to flooding the pipes. This system is more sensitive than conventional smoke detectors associated with gaseous suppression systems. **Exhibit 6** illustrates the VESDA system functions to identify the various stages of smoke detection.



**Exhibit 5 Access Portal with Biometric Palm Reader**

*At the access portal, an individual must use the biometric palm reader as well as a badge reader to gain access to the data center.*



VITA 142\_r3

**Exhibit 6 Very Early Smoke Detection Apparatus (VESDA) Detection**

*The sensitivity of VESDA provides an early alert in the incipient stage of a fire.*

RESC will be equipped with 30-inch raised floors to accommodate under floor cabling, as well as to support the circulation of conditioned air to equipment on the floor. The raised floor will meet or exceed live load criteria of 150 pounds per square foot. All cabinets (server Racks) will be bolted to the floor. The office areas will have 6-inch access floors to support voice and data cabling as well as electrical service to the cubicles and offices. The facility will be designed with depressed slab technology, eliminating ramps and steps associated with raised or access floors. The ceilings will be plenum to provide the maximum ventilation and heat exhaust vital to the successful maintenance of a cool environment. The print area will be provided with an 18 inch raised floor to accommodate a cooling environment sufficient to support printers and associated support equipment.

Both data centers will be equipped with supervised water detection systems under the raised floor.

Both RESC and SESC will also be equipped with satellite TV services supporting VITA and Northrop Grumman personnel areas. The Northrop Grumman installation will be in the CMOC to monitor weather and news alerts. VITA will designate the location of the monitors for their offices.

The separation between RESC and SESC is 247 miles, which exceeds the requirement of 100 miles or more between the primary and back-up data centers.

Employee safety management and emergency plans and procedures will be implemented in accordance with VITA and current Northrop Grumman policies and procedures. These policies and procedures will meet or exceed Federal, Commonwealth and Local requirements.

### **Site Selection of New Richmond Enterprise Solution Center**

The Northrop Grumman facilities solution calls for two sites located in the Commonwealth of Virginia. The Richmond Enterprise Solutions Center will be located in the Meadowville Technology Park, located in Chesterfield County, as shown in **Exhibit 7**.



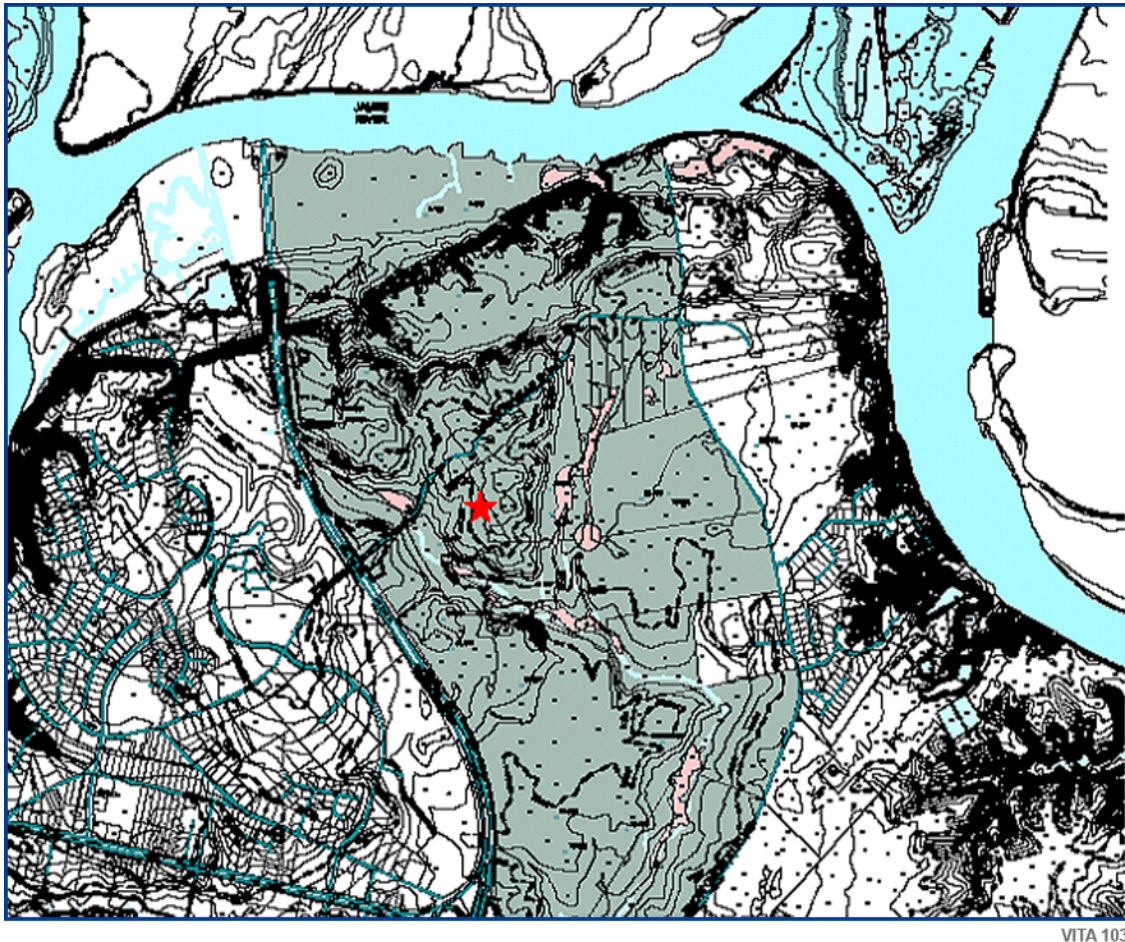
VITA 101

**Exhibit 7 Meadowville Technology Park**

*This aerial photograph shows Meadowville Technology Park, with an outline of the specific proposed site for the new Richmond Enterprise Solutions Center, along with the proposed access road that will be provided. This site meets the requirements for an isolated site.*



The Meadowville Technology Park Topography is shown in **Exhibit 8**.



**Exhibit 8 Meadowville Technology Park Topography**

*On this topographical map of the Meadowville Technology Park in Chesterfield County, Virginia, the red star identifies the approximate location for the site of the new Richmond Enterprise Solutions Center, which is 113 feet above the flood plain.*

RESC will be designed and constructed as a data center and office complex, housing a 40,000-square-foot data center with support areas consisting of offices for VITA and Northrop Grumman personnel, located in the Meadowville Technology Park Site 5. The total area of the building will be 164,700 square feet on 20 acres. In addition, amenities for employees will be provided, such as break rooms, conference rooms and outside patio areas. The site will also include a laboratory for testing various computing equipment, and a shipping and receiving area with loading dock and storage to complement the functions of the offices and data center.

Parking spaces will be provided to accommodate both employees and visitors. The current forecast is for 500 employees. All parking will be provided at no cost to employees. Northrop Grumman will manage the parking spaces and allocation.

### **Network Services Connectivity**

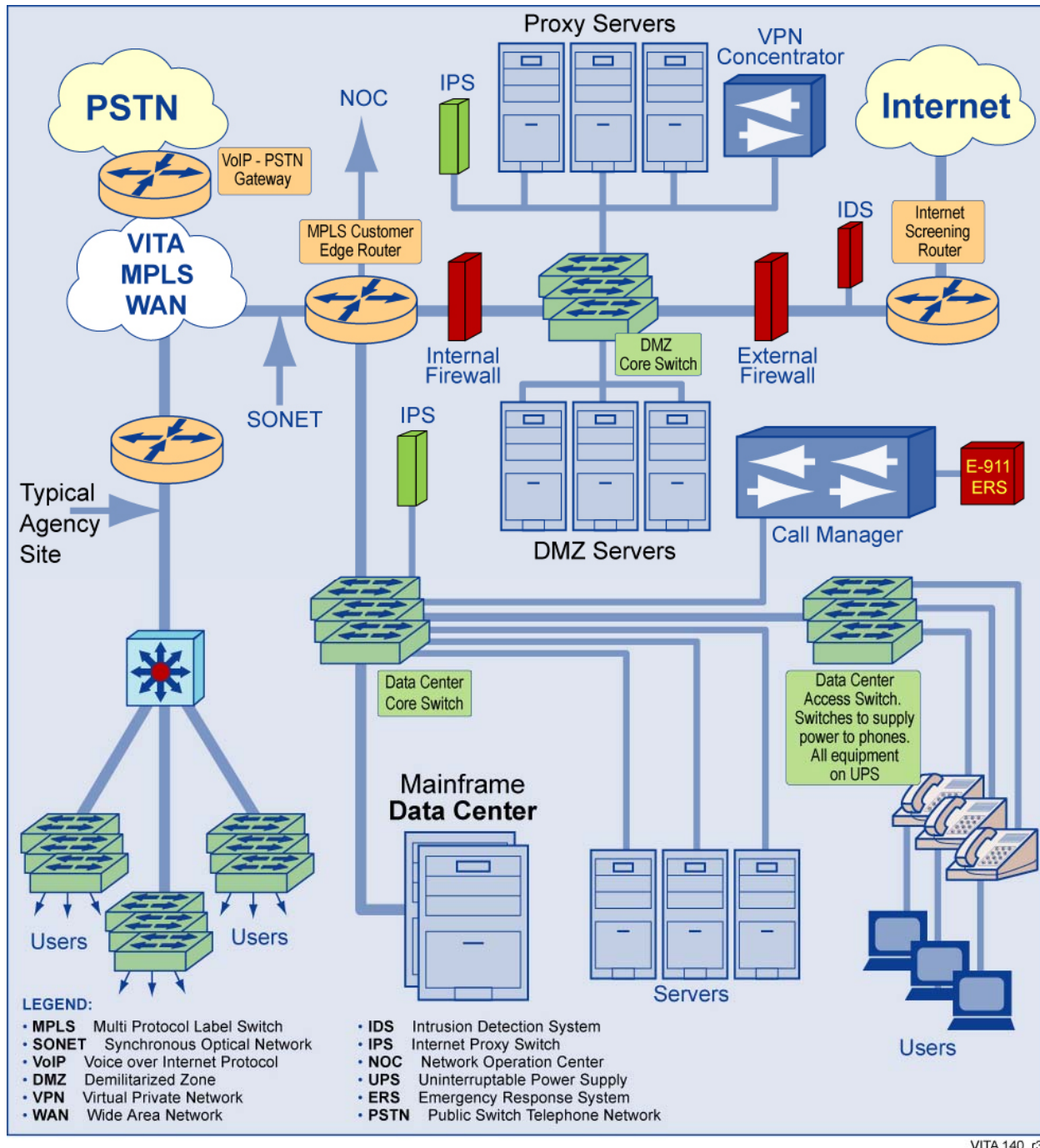
Northrop Grumman will provide network connectivity for the new data centers. This will include voice and data throughout the facility. The data center will be served by multiple network circuits, including a synchronous optical network (SONET) 622 megabits per second (Mbps)

ring, and a 1000 Mbps Ethernet Transparent Local Area Network Services (TLS) circuit. These circuits will enable secure access to Commonwealth systems, data and records located at the data center from VITA's designated locations.

Upon arrival of the signal at the data center from the aforementioned circuits, the signal will traverse a network firewall for a security check then go into a main core switch which will route it towards its destination. The core switch is equipped with monitoring systems that will provide ongoing periodic reports on network capacity and utilization, as well as detailed specialized reports on demand. The reports will provide data to determine compliance with service level agreements (SLAs), and, by performing trend analysis, Northrop Grumman can determine any required actions to improve network performance. This may include adding capacity to the network.

*Asset Acquisition and Network Provisioning*—Northrop Grumman will perform all asset and acquisition provisioning services for the network, including engineering, based on the reports generated by the Network Operations Center (NOC). This includes, but is not limited to, build-out, relocation, testing, and production activation. All network activities performed by Northrop Grumman will be presented to VITA for review and approval prior to implementation to assure operational success and customer satisfaction.

**Exhibit 9** illustrates how the mainframes and servers are connected to the network as it comes into the Data Center in the Richmond Enterprise Solutions Center.



### Exhibit 9 Data Center Network Connectivity

*Data center processing for mainframe and server workloads are connected via the VITA network to provide information and reporting to VITA and its customers.*

### VITA Office Space Requirements

RESC will house the VITA personnel responsible for management and oversight of the Northrop Grumman PPEA agreement, the Northrop Grumman Program Management Office, and the Northrop Grumman team.



As a result of the build-to-suit solution, VITA will be an integral part of the planning and design to accommodate their needs. VITA will have its own office space within the facility located next to Northrop Grumman Program Management Office. The VITA office space will be fully furnished and designed to provide 220 square feet per person and accommodate 158 people, with a growth to 200 within 5 years. This space allocation includes common areas to provide for such needs as hallways and conference rooms. Northrop Grumman's plans include providing shared facilities, such as a 250-seat auditorium, a video teleconferencing room, a training room to accommodate up to 40 students, an employee break room, and multiple conference rooms. The auditorium will have amenities such as digital projection, theater sound, theater lighting, and the capability to field 2-way conversations via cordless technology. The auditorium will provide a large venue for "all hands" meetings, presentations to agencies and professional gatherings, and will be shared by VITA and Northrop Grumman. The training room will be designed to accommodate multiple training scenarios, and will be equipped with voice and data to support the needs of both students and instructors. The video teleconferencing (VTC) room will include a large video projection interface and lighting to enhance the conference capabilities. Using the proposed sites eliminates any concern for utility cross over that could be an issue in retrofit sites. These sites will be constructed to meet current and future industry hardware demands, rather than trying to retrofit existing sites.

### **Staffing for Facilities Management Richmond Enterprise Solutions Center**

Facility operations will be provided by Northrop Grumman and Lee Technologies upon commissioning and thereafter. This function will report to the Cross Functional Service Manager as part of the Program Management Office. Facility maintenance will be performed by Lee Technologies, a Virginia company headquartered in Fairfax, Virginia. The plan for the operation of the facilities will be documented with standard and emergency operating procedures to provide proper operation and maintenance of the facility, and to provide for emergency situations that may arise. All building systems will be monitored and managed using a Building Management System (BMS) to provide proper function of the infrastructure equipment and timely response to failures. BMSs will be installed to provide on-site monitoring in the facilities office and at the CMOC. Also, BMS monitoring will be provided off-site at Lee Technologies. All maintenance will be performed according to industry standards including, but not limited to, IEEE 446, NFPA 110, and NETA MTS-2001. The maintenance of the facilities will be automatically scheduled by a computerized maintenance program, managed by Lee Technologies, to provide timely completion of maintenance as recommended by the manufacturers. This system also contributes to the change control process when maintenance is performed on mission-critical equipment, as well as the basic building equipment.

### **Help Desk and Back-up Data Center Requirements**

SESC will be designed and constructed as a call center and back-up data center housing a 20,000-square-foot data center, with support areas consisting of call center offices for Northrop Grumman personnel, as well as a training center and video teleconferencing facility. The total area of the building will be 131,000 square feet, on 12.4 acres. In addition, amenities for employees will be provided, such as break rooms, conference rooms, and outside patio areas. The site will also include a shipping and receiving area with loading dock and a 40,000-square-foot records storage area supporting Northrop Grumman. Security will be provided using SAMS surveillance equipment, access control and a receptionist/guard during prime shift.

Access to various parts of the building, such as the data center, will be zoned with access granted on a need basis for each zone. Parking will be more than adequate to accommodate both employees and visitors.

The data center will be constructed to standards that accommodate a net of 100 watts per square foot, with the ability to handle higher heat loads with the aforementioned chilled water server cabinets.

The design of the data center will be in accordance with industry standards for a back-up data center such as those provided by SunGard™. This means that it will have many Tier III characteristics for reliability, but would not be built to that specification.

The location is isolated from high-visibility public and private structures, main railroad lines, shipyards, nuclear power installations, military installations, container storage sites, hazardous waste dumps, commercial processing facilities, airports, HAZMAT storage, and high crime areas. Interstate Highway 81 is within approximately 20 miles of the facility site. The facility will house only those personnel supporting VITA and Northrop Grumman operations. Northrop Grumman's intent is to share the IT resources to provide the best value to VITA and its customers. Security measures will be taken to provide segregation and protection of Commonwealth data. There are no historical issues with weather, hurricane, earthquake, or flood. The site is not in a flood zone.

The SESC will be located in the Russell County Regional Business/Technology Park, Site 1, as shown in **Exhibit 10**.

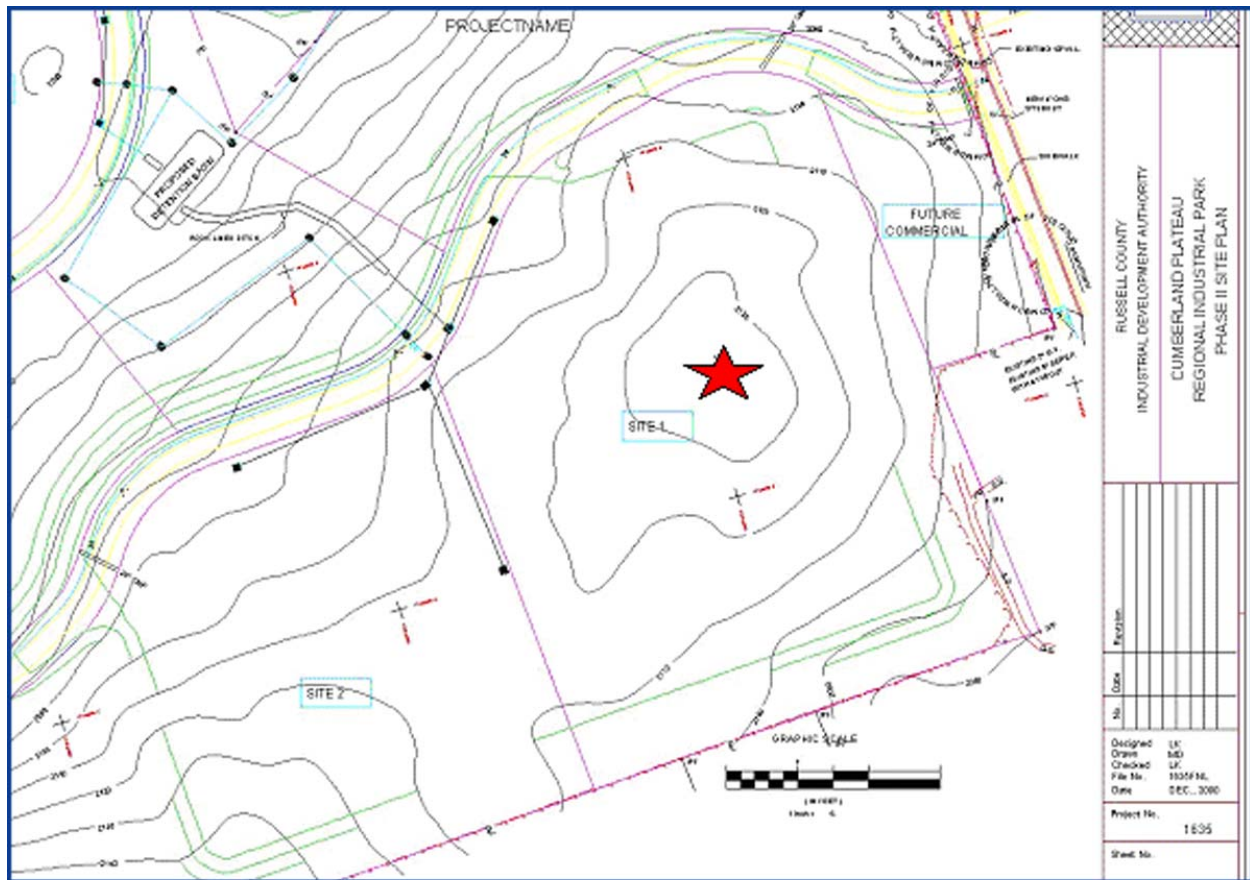




VITA 102

**Exhibit 10 Russell County Regional Business/Technology Park**

**Exhibit 11** shows the topographic depiction of the Russell County Regional Business/Technology Park.



VITA 104

### Exhibit 11 Russell County Regional Business/Technology Park Topography

*The red star identifies the approximate location for the SESC, which shows the location as the highest point on the property.*

### Staffing for Southwest Enterprise Solutions Center Operation and Maintenance

Facilities operation and maintenance of SESC will be performed by Northrop Grumman employees and by Lee Technologies, a Virginia company headquartered in Fairfax, Virginia. Operation and maintenance staff will report to the Cross Functional Services manager as part of the Program Management Office. The plan for the operation of the facilities will be documented with standard and emergency operating procedures to provide proper operation and maintenance of the facility, and to provide for emergency situations that may arise. All building systems will be monitored and managed using a BMS to provide proper function of the infrastructure equipment and timely response to failures. BMS' will be installed to provide on-site monitoring in the facilities office and at the CMOC. Also, BMS monitoring will be provided off-site at Lee Technologies. All maintenance will be performed using best practices as outlined by the industry standards including, but not limited to, IEEE 446, NFPA 110, and NETA MTS-2001. The maintenance of the facilities will be scheduled by a Computerized Maintenance Program (CMP), managed by Lee Technologies, to provide timely completion of maintenance as recommended by the manufacturers. This system also contributes to the change control process when maintenance is performed on mission-critical equipment, as well as the basic building equipment.